

REMARKS

Claims 1-21 are pending. Claims 1-16 stand rejected.

Claims 17-21 are canceled herewith in accordance with Applicants' election of claims 1-16 in the Response to Restriction Requirement filed on October 5, 2004.

Claims 1, 15 and 16 are amended. Claims 2-14 are canceled and a new claim 22 has been added. No new matter has been added by these amendments.

After the entry of the amendments submitted herein, claims 1, 15, 16 and 22 remain pending.

I. Claim Rejections

Claims 1-16 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,449,937 to Arimura *et al.* ("Arimura").

In response, claim 1 has been amended to claim the staggered configuration of the pocket ion implants shown in FIG. 3. The amended claim 1 now recites:

A semiconductor device comprising:
a source, a gate and a drain;
a source-drain depletion region in a substrate under the
gate;
a single deep-pocket ion implant in the source-drain
depletion region at a drain side; and
a single shallow-pocket ion implant in the source-drain
depletion region at a source side.

(emphasis added). As shown by the highlighted text, amended claim 1 requires that the positions of the deep-pocket ion implant and the shallow-pocket ion implants are staggered. The deep-pocket ion implant is on the drain side of the source-drain depletion region while the shallow-pocket ion implant is on the source side of the source-drain depletion region. In addition, claim 1 requires "a single" shallow-pocket ion implant in the source-drain depletion region which is at a source side and a single deep-pocket ion implant in the source-drain depletion region which is at a drain side. Thus, the staggered configuration of the pocket ion implants of claim 1 requires only one of each pocket ion implant types.

In contrast, the device disclosed in Arimura does not show pocket ion implants in staggered configuration. As shown in FIGS. 6F and 7F of Arimura, the pocket implant regions (10) and (15) are both on one side, namely the drain side, of the device. But, more importantly, the process disclosed in Arimura can not produce a staggered configuration required by the amended claim 1. As shown by the process steps illustrated by FIGS. 6E and 7E and the associated texts of Arimura at column 7, lines 44-59, the ion impurity (14), which forms the deep-pocket ion implant (15), is implanted on the drain side while the source side of the device is masked by the resist layer (20). Thus, the shallow-pocket ion implant (10) remains on the same side as the deep-pocket ion implant (15). What is implicit in the process of Arimura is that the resist mask (20) may be moved to the drain side to produce the deep-pocket ion implant (15) on the source side, but even then, there will be a shallow-pocket ion implant (10) on the same side as the deep-pocket implant (15).

In fact, the final configurations illustrated by FIGS. 6E and 7E of Arimura show that shallow-pocket ion implants (10) always exists on both the drain side and the source side of the

device. In contrast, the amended claim 1 requires that there is only "a single shallow-pocket ion implant in the source-drain depletion region at a source side." Thus, Arimura does not disclose or suggest every limitation of the invention required by amended claim 1. And furthermore, the process of Arimura is not capable of producing the staggered configuration of the pocket ion implants recited in claim 1.

Accordingly, amended claim 1 is allowable over Arimura. Withdrawal of the rejection of claim 1 and its allowance are requested.

Amended claim 15 depends from amended claim 1, which is allowable over Arimura. Therefore, claim 15 is also allowable over Arimura.

Moreover, Arimura does not disclose the limitations required by the amended claim 15. Amended claim 15 requires that on the sides opposite from the pocket ion implants recited in amended claim 1, there are regions that are pocket ion implants that have been countered (*i.e.* neutralized) by the ions that formed the corresponding source or drain regions. In contrast, the process disclosed in Arimura does not involve any countering (*i.e.* neutralizing) of any previously implanted ion impurities. Thus, withdrawal of the rejection of claim 15 and its allowance are requested.

A new claim 22 is added to more clearly claim the embodiment of the invention illustrated in FIG. 4 of the present application. The embodiment of the invention illustrated in FIG. 4 shows a configuration of the shallow-pocket ion implant and the deep-pocket ion implant that is a mirror image of the configuration claimed in amended claim 1. In this embodiment, the

single shallow-pocket ion implant in the source-drain depletion region is on the drain side while the single deep-pocket ion implant in the source-drain depletion region is on the source side.

For the same reasons discussed above in reference to amended claim, the disclosure of Arimura does not show or suggest every limitation of the invention claimed the new claim 22. Accordingly, new claim 22 is also allowable over Arimura. Allowance of new claim 22 is requested.

Amended claim 16 depends from new claim 22, which is allowable over Arimura. Thus, amended claim 16 is also allowable over Arimura. Furthermore, the discussion presented above in reference to the amended claim 15 is also applicable to amended claim 16. Thus, allowance of amended claim 16 is requested.

The amendments presented herein are fully supported by the disclosure in the originally filed specification and no new matter has been added.

II. Conclusion

Applicants believe that all outstanding issues have been addressed herein and the pending claims 1, 15, 16 and 22 are in condition for allowance.

Because this Amendment is being submitted within the THREE MONTHS time period from the December 15, 2004 mailing date of the Office Action, no fee is believed required for submission of this communication. However, the Commissioner is hereby authorized to charge

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any additional fees required associated with this communication to Duane Morris LLP Deposit

Account No. 50-2061.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Won Joon Kouh', written over a horizontal line.

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